

CONCRETE OVERLAY DETAILS

DECKS WITH LESS THAN 2½" COVER ON THE TOP LAYER OF REINFORCEMENT

The new concrete overlay shall provide 2½" of cover for the top layer of reinforcement and shall have a minimum thickness of 1.5".

The new deck thickness is determined by subtracting the existing top rebar cover from 2.5" and adding the result to the thickness of the existing deck.

REMOVAL DEPTH

C_e = existing cover

T_e = existing deck thickness

D_m = mean removal depth

S = ½ the maximum aggregate size

<u>ITD Construction Specifications</u>	<u>Maximum Aggregate Size</u>
Up to 1967	2"
Between 1967 & 1976	1.5"
1976 & after	1"

$$T_n = \text{new deck thickness} = T_e + (2.5 - C_e)$$

$$T_e - (D_m - S) = T_n - 1.5 \quad \Rightarrow \quad D_m = S + C_e - 1.0$$

On the contract plan details, show D_m , S , C_e , T_e , & T_n values.

CONCRETE OVERLAY QUANTITY

Use D_{\max} to calculate the concrete overlay quantity. This will provide a pay item cost that should reduce cost over-runs during construction.

$$D_{\min} = D_m - S$$

$$D_{\max} = D_m + S$$

EXAMPLE

$$T_e = 6"$$

$$C_e = 1.25"$$

$$T_n = 6 + (2.5 - 1.25) = 7.25"$$

1957 ITD Construction Specifications = 2" max aggregate

$$S = 2"/2 = 1"$$

$$D_m = T_e - T_n + 1.5 + S = 6 - 7.25 + 1.5 + 1 = 1.25"$$

$$D_{\min} = D_m - S = 1.25 - 1 = 0.25"$$

$$D_{\max} = D_m + S = 1.25 + 1 = 2.25"$$

Concrete overlay quantity

$$\text{Deck Thickness after Removal } T_r = T_e - D_{\max} = 6 - 2.25 = 3.75"$$

$$\text{Overlay thickness} = T_n - T_r = 7.25 - 3.75 = 3.5"$$

Revisions:

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New article